Suicide Attempts and Ideation in Patients With Bipolar I Disorder

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Background: Suicidal thinking and behavior are common in individuals with bipolar disorder.

Method: Suicidal ideation and suicide attempts were examined in 175 patients with bipolar I disorder (diagnosis confirmed with the Schedule for Affective Disorders and Schizophrenia or the Structured Clinical Interview for DSM-IV) participating in the Pittsburgh Study of Maintenance Therapies in Bipolar Disorder. Patients who attempted suicide before entering the study were compared with those who did not attempt suicide with respect to clinical and demographic characteristics.

Results: Twenty-nine percent of the patients had attempted suicide prior to entering the study. Suicide attempts happened at a relatively young age and in the first period of the illness. Greater severity of bipolar disorder, as indicated by a greater number of previous depressive episodes ($p = .0009$) and higher HAM-D-25 scores ($p = .04$), and higher body mass index ($p = .03$) were significantly correlated with a history of suicide attempts. None of the patients with a history of suicide attempt attempted suicide again. However, 5 patients without a history of suicide attempt did attempt suicide. Four of these patients did not display severe suicidal ideation at the assessment that preceded the suicide attempt. No subject completed suicide during the 11 years of the study.

Conclusion: Greater severity of bipolar disorder and higher body mass index are significantly correlated with a history of suicide attempts. However, a treatment program in a maximally supportive clinical environment can reduce suicidal behavior in high-risk patients. In some cases, suicide risk is transient and may be preceded by a period of severe suicidal ideation that lasts only a few minutes or hours. In such cases, mental health professionals are unable to predict suicide attempts.

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Individuals with bipolar disorder comprise a patient population at high risk for suicide-related morbidity and mortality.[1–4] Twenty-five percent to 50% of patients with bipolar disorder attempt suicide at least once during their lifetime, and 10% to 15% die from suicide.[2,3,5] Despite a staggering number of research reports examining the relationship between suicidality and bipolar disorder, we know very little. The majority of studies are concerned with prevalence and morbid risk. Many studies do not differentiate between unipolar and bipolar or between bipolar I and bipolar II disorder and fail to investigate the association between suicidal ideation and suicidal behavior. Even though there has been an increase in national research imperatives and suicide prevention programs, the rate of suicide has increased in every generation since 1910.[6] The substantial risk of suicide-related morbidity and mortality associated with bipolar disorder dictates the need for an increased research focus on suicidality in patients with bipolar disorder.[7]

Suicidal behavior is on a broad continuum ranging from frequent risk-taking behavior to pervasive suicidal ideation or rumination, repeated suicide attempts, and death from suicide.[8] The relationship between suicidal ideation, suicide attempts, and completed suicide is still unclear.

This report examines suicidal ideation and suicide attempts in a sample of 175 patients with bipolar I disorder participating in a randomized controlled trial. Patients who attempted suicide prior to study entry were compared with those who did not on baseline characteristics and on suicidal ideation during the study. We hypothesized that lifetime suicide attempters are more likely than nonattempters to endorse severe suicidal ideation during the treatment of their acute affective episode. We also hypothesized that clinical and demographic differences exist that distinguish attempters and nonattempters. These hypotheses were based on our clinical observations during the trial and clinical experience with patients with bipolar I disorder over the years, as well as on published reports concerning suicidality among bipolar I patients.

METHOD

The Pittsburgh Study of Maintenance Therapies in Bipolar Disorder (MTBD) protocol is a randomized con-

Table 1. Clinical and Demographic Characteristics of Patients With and Without Lifetime Suicide Attempts[a]

Variable	No Suicide Attempt (N = 125)	Suicide Attempt (N = 50)	Statistical Analysis
Gender, female, %	51.2	70.0	p = .03[b]
Race, white, %	87.2	98.0	p = .04[b]
Marital status, %			
Married	34.4	40.0	
Divorced	11.2	26.0	
Separated	4.8	6.0	p = .02[b]
Never married	48.8	26.0	
Widowed	0.8	2.0	
Age, y	34.22 ± 10.62 (34)	37.56 ± 10.06 (37.5)	t = –1.91, df = 173, p = .06
Body mass index	27.89 ± 6.35 (26.63)	30.21 ± 6.67 (29.92)	t = –2.15, df = 172, p = .03
Education, y	14.90 ± 1.92 (14)	14.58 ± 1.95 (14)	t = 1.00, df = 173, p = .32
Age at onset of first depressive episode, y	22.83 ± 8.32 (20)	20.74 ± 6.24 (19.5)	t = 1.78, df = 122.87, p = .08
Age at onset of first manic episode, y	26.01 ± 9.28 (23)	25.80 ± 8.75 (24)	t = 0.14, df = 171, p = .89
Time since first depressive episode, y	11.72 ± 9.06 (10)	16.82 ± 10.49 (15)	t = –3.16, df = 162, p = .002
Time since first manic episode, y	8.30 ± 7.18 (7)	11.76 ± 9.36 (9)	t = –2.35, df = 73.52, p = .02
Baseline HAM-D-17 score	14.77 ± 7.14 (16)	17.44 ± 7.96 (17.5)	t = –2.16, df = 173, p = .03
Baseline HAM-D-25 score	18.68 ± 9.67 (21)	22.10 ± 9.91 (24)	t = –2.10, df = 173, p = .04
Baseline Bech-Rafaelsen Mania Scale score	11.43 ± 12.58 (4)	8.88 ± 11.94 (3)	t = 1.23, df = 173, p = .22
No. of previous depressive episodes	10.94 ± 14.89 (4)	15.02 ± 15.15 (6)	Z = 3.33, p = .0009[c]
No. of previous manic episodes	7.52 ± 11.99 (3)	9.04 ± 13.20 (3)	Z = 1.24, p = .22[c]
Duration of index episode, wk	33.03 ± 52.65 (17)	41.05 ± 68.24 (20.22)	Z = 0.65, p = .52[c]
Time to first stabilization, wk	18.46 ± 18.85 (11.43)	22.29 ± 23.95 (13.43)	t = –0.96, df = 131, p = .34
Global Assessment of Functioning[17] score	48.48 ± 8.62 (50)	47.54 ± 9.69 (50)	t = 0.62, df = 172, p = .53

[a]Values shown as mean ± SD (median) unless otherwise noted.
[b]Fisher exact test.
[c]Wilcoxon rank sum test.
Abbreviation: HAM-D = Hamilton Rating Scale for Depression.

trolled trial comparing Interpersonal and Social Rhythm Therapy (IPSRT) and an intensive clinical management (ICM) approach in the treatment of patients affected by bipolar I disorder.[9,10] Both IPSRT and ICM were provided as adjuncts to pharmacotherapy. Each patient was treated until remission of the acute affective episode and for up to 2 years of maintenance treatment. To meet inclusion criteria for the trial, patients were required to (1) have a lifetime diagnosis of bipolar I disorder (diagnosis confirmed with the Structured Clinical Interview for DSM-IV[11] or, in the early part of the trial, the Schedule for Affective Disorders and Schizophrenia[12]); (2) be experiencing at least their third affective episode, with the most recent episode being within 5 years from the index episode; and (3) be between 18 and 65 years old. Exclusion criteria were rapid cycling, substance-related disorder in the previous 5 years, full-criteria borderline or antisocial personality disorder, unstable severe medical condition, and pregnancy. At each clinic visit, an independent evaluator assessed patients' clinical status with the Bech-Rafaelsen Mania Scale (BRMS)[13] and a 25-item version of the Hamilton Rating Scale for Depression (HAM-D-25).[14]

Of particular interest for this report is the suicide item of the HAM-D. Evaluators assigned patients a score of 0 to 4: 0 = absent; 1 = doubtful or trivial—in response to direct questioning, the patient says life is empty, not worth living; 2 = moderate—recurrent thoughts of death, death wishes, spontaneously given or elicited only by questioning; 3 = severe—active suicidal thoughts, threats, or gestures; and 4 = very severe—actual attempt of suicide. A score of 4 is rarely assigned to outpatients.

Since we have observed the association of increased body weight and morbidity,[15] we were interested in evaluating the relationship between body weight and suicide. We recorded the patients' weight at each clinic visit utilizing the body mass index (BMI) weight classification criteria published by the World Health Organization and accepted and amplified by the International Obesity Task Force.[16] BMI is calculated as weight (kilograms) divided by height (meters squared). Individuals are considered underweight if their BMI is less than 18.5, normal weight if their BMI is 18.5 to 24.9, overweight if their BMI is 25.0 to 29.9, and obese if their BMI is 30.0 or greater.

The sample for this report includes 175 patients with bipolar I disorder who entered the study from 1991 to 2000. Demographic and clinical characteristics are presented in Table 1. Data on lifetime history of suicide attempts were obtained from National Institute of Mental Health (NIMH) Life Charting protocols[18] when available (N = 159) or from patients' intake psychiatric evaluation report (N = 16). Data on lifetime use of medications were obtained from NIMH Life Charting protocols[18] when available (N = 134).

The University of Pittsburgh's Biomedical Institutional Review Board approved all recruitment, assessment, and treatment procedures. All patients entering the protocol provided written informed consent after receiving a complete description of the study and having an opportunity to ask questions.

Table 2. Prestudy Medication Use for Obese (N = 48) and Nonobese (N = 86) Patients[a]

Drug Class	Prevalence, N (%)	Difference in Prevalence[b] χ^2	p	Duration (wk) Mean	SD	Median	Difference in Duration[c] Z	p
Lithium								
Obese	42 (88)	1.7	.17	173.6	253.2	40.4	1.2	.25
Not obese	67 (78)			128.2	203.0	22.9		
Other mood stabilizers								
Obese	23 (48)	6.1	.01	27.0	53.3	0	2.5	.02
Not obese	23 (27)			14.0	50.2	0		
Newer neuroleptics								
Obese	9 (19)	3.3	.07	7.0	22.7	0	1.9	.07
Not obese	7 (8)			1.3	6.9	0		
Older neuroleptics								
Obese	23 (48)	2.8	.09	55.6	124.6	0	–0.6	.54
Not obese	54 (63)			49.9	109.0	5.1		
Antidepressants								
Obese	42 (88)	6.6	.01	102.0	157.5	37.5	2.6	.01
Not obese	58 (67)			64.3	126.0	11.5		

[a]Prestudy medication data available only for a subset of 134 patients who completed the National Institute of Mental Health Life Charting protocol.
[b]df = 1.
[c]Wilcoxon test.

Data Analysis

Suicide attempters and nonattempters were compared on a number of demographic and clinical characteristics using the Fisher exact test for categorical variables (i.e., gender, race, and marital status) and t tests or Wilcoxon rank sum tests for continuous variables when appropriate. A significance level of .05 was used for all statistical tests. Chi-square tests were used to compare obese (BMI ≥ 30) and nonobese patients for prestudy history of treatment (≥ 2 weeks) with medications from 5 specific classes, and Wilcoxon rank sum tests were used to compare duration of treatment with these medications. T tests were used to compare mean BMI between patients with and without specific comorbidities.

RESULTS

Fifty patients (29%) attempted suicide prior to entering the MTBD study. Of these 50 patients, 39 attempted suicide once, 6 attempted twice, 2 attempted 3 times, and 3 attempted 5 times. Averaging across all attempts for each patient with multiple suicide attempts revealed that the mean (SD) time between attempts for all such patients was 4.4 (3.6) years (median = 5.0; range, 3 days–10 years). Six of the 11 patients with multiple suicide attempts always attempted suicide in the same 4-month period of the year. Three of these patients made all of their attempts in the same month. One patient attempted suicide on the same day (his birthday) of 3 different years. The mean age at first suicide attempt was 26.7 (10.4) years (median = 23 years; range, 8–60.5 years). The mean time from the first depressive episode to the first attempt was 5.9 (10.6) years (median = 3.3 years; range, –14.9 to 31.3 years). Demographic and clinical characteristics of suicide attempters and nonattempters at entry into the MTBD study are provided in Table 1.

Suicide attempters were significantly more likely than nonattempters to report severe suicidal ideation (score of 3 on the HAM-D-25 suicide item) during the acute phase of treatment ($\chi^2 = 7.60$, df = 1, p = .006). Suicide attempters were significantly more likely to be white, female, and either divorced or never married. They also had more previous depressive episodes, more severe baseline depression, and higher BMI (Table 1). To investigate this last finding more closely in our sample, we looked at the differences for lifetime prestudy medication use between obese and nonobese patients. The results are reported in Table 2. We also looked at the relationship between BMI and presence of comorbid diagnoses at MTBD study entry. The result of the comparison of BMI between MTBD patients with and without specific baseline comorbidities is reported in Table 3.

No patient completed suicide during the 11 years of the MTBD study. Five patients attempted suicide during the course of MTBD study, 4 men and 1 woman. In all cases, this attempt was the first lifetime suicide attempt. All 5 of the patients entered the study during a depressive episode. The clinical and demographic characteristics of these 5 patients are provided in Table 4.

DISCUSSION

Many studies have described the relationship between suicidal ideation and suicide attempt, but few authors have evaluated this relationship in patients with bipolar I disorder.[19] Consistent with our hypothesis, we found that patients with a lifetime history of suicide attempts were significantly more likely to endorse severe suicidal

Table 3. Comparison of Body Mass Index (BMI) Between Patients With and Without Specific Baseline Comorbidities

	With Disorder		Without Disorder		Statistic[a]	
Comorbidity	N	BMI (mean ± SD)	N	BMI (mean ± SD)	t	p
Panic disorder	14	31.7 ± 7.0	160	28.3 ± 6.4	–1.9	.06
GAD	6	33.7 ± 6.7	168	28.4 ± 6.5	–2.0	.05
Alcohol-related disorder	44	29.6 ± 6.9	130	28.2 ± 6.4	–1.3	.21
Substance-related disorder	29	28.4 ± 5.7	145	28.6 ± 6.7	0.1	.91
OCD	6	27.3 ± 5.3	168	28.6 ± 6.6	0.5	.63
Phobia	9	31.7 ± 7.4	165	28.4 ± 6.4	–1.5	.14

[a]t test; df = 172.
Abbreviations: GAD = generalized anxiety disorder, OCD = obsessive-compulsive disorder.

Table 4. Clinical and Demographic Characteristics of Patients Attempting Suicide During the Maintenance Therapies in Bipolar Disorder Study

Characteristic	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Gender	Female	Male	Male	Male	Male
Age at attempt, y	34	59	35	30	29
No. of weeks between entry into the study and attempt	4	7	12	7	7
Method of attempt	Medication overdose	Medication overdose	Hanging	Jumping from car	Carbon monoxide
Baseline HAM-D suicide item score	0	0	2	2	1
Last recorded HAM-D-17 total score (no. of days prior to attempt)[a]	30 (2)	27 (1)	6 (6)	22 (same day)	14 (4)
Last recorded HAM-D suicide item score (no. of days prior to attempt)[a]	0 (2)	1 (1)	1 (6)	3 (same day)	1 (4)
Last recorded score on HAM-D somatic/psychological anxiety items (no. of days prior to attempt)[a]	3/3 (2)	0/2 (1)	1/0 (6)	2/3 (same day)	0/2 (4)
Second to last recorded score on HAM-D somatic/psychological anxiety items (no. of days prior to attempt)[b]	0/2 (8)	1/2 (6)	1/2 (13)	0/1 (6)	0/2 (10)
Last recorded score on BRMS (no. of days prior to attempt)[a]	1 (2)	1 (1)	0 (6)	21 (same day)	0 (4)
Month of attempt	Sept	Feb	March	Jan	Sept
Adjunctive treatment	IPSRT	ICM	IPRST	ICM	ICM

[a]Last score before attempt.
[b]Second to last score before attempt.
Abbreviations: BRMS = Bech-Rafaelsen Mania Scale, HAM-D = Hamilton Rating Scale for Depression, ICM = intensive clinical management, IPSRT = Interpersonal and Social Rhythm Therapy.

ideation during the acute treatment phase of the MTBD study.

The prevalence of a history of lifetime suicide attempts in our sample was high (29%), but somewhat lower than prevalence rates reported by other authors.[2,3,20] The lower prevalence in our sample may be attributable both to our exclusion criteria (we excluded patients who met full criteria for borderline or antisocial personality disorders and patients who had chronic drug or alcohol abuse that was unrelated to their bipolar episodes) and to the biases of retrospective assessments.

Our results are not generalizable to all bipolar patients, as our sample was entirely composed of patients with bipolar I disorder. It should be noted that higher rates of suicide attempts have been reported for bipolar II disorder in some studies[21] but not in others.[1] Many authors, including Goldsmith et al.[20] and Kuo et al.,[22] have suggested that a history of suicide attempts is a strong predictor of new attempts. In fact, a number of our patients attempted suicide more than once prior to entering the MTBD study, and the fact that none of the previous attempters attempted suicide during MTBD is more a result of the treatment in a maximally supportive clinical environment than an indicator of a low suicide risk in previous attempters.[23]

Consistent with previous studies,[2,5,24,25] our study showed that the MTBD patients attempted suicide at a young age (median = 23 years) and during the first period of illness (median = 3.3 years from the first depressive episode),[5,26,27] a time when patients may have more energy and must face the diagnosis and the consequences of the first episodes. Also, compared with nonattempters, suicide attempters had more previous depressive episodes, a greater number of years since their first depressive and manic episode, and more severe baseline depression and were more likely to be female. These findings are consistent with most of the previous studies.[2,19,28]

For instance, Strakowski and colleagues[29] demonstrated the importance of depressive symptoms as a correlate of suicidality in patients with bipolar disorder, and Sax and colleagues[28] found a relationship between early-onset affective psychosis and greater suicidality. Our findings also confirm the relationship between suicide attempts and a more severe course of the disorder.

We found that suicide attempters had a significantly higher BMI than nonattempters. In a previous study[15] of the same sample, we demonstrated that obesity is correlated with important clinical features of patients with bipolar I disorder. We found that obese patients (1) experienced a greater number of lifetime depressive and manic episodes, (2) presented with a more severe and difficult-to-treat index affective episode, and (3) were more likely to develop an affective recurrence and, in particular, a depressive recurrence. The present finding on the relationship between suicide attempts and BMI clearly suggests that suicide risk is yet another aspect of poorer outcome in patients with high BMI. Of interest, we found a significant relationship between BMI and likelihood of having a comorbid generalized anxiety disorder. There also was a trend toward a relationship between BMI and likelihood of comorbid panic disorder. Obese patients were more likely than nonobese patients to have been treated with antidepressants or non-lithium mood stabilizers. While we cannot exclude the possibility that obesity is an outcome rather than a cause of more severe forms of bipolar disorder, we also cannot neglect the possibility that obesity may well independently increase the risk of suicide through its severe psychosocial consequences, including discrimination and stigmatization in multiple areas of daily life, and its negative impact on general physical well-being and functioning, quality of life, self-esteem, and psychological well-being.[15]

The limited number of patients who attempted suicide during the period of our study did not permit us to evaluate statistically the relationship between suicide attempt and other co-occurring (at the time of the attempt) symptoms. However, it is noteworthy that in 2 of the 5 attempters the total HAM-D score in the week prior to the attempt was not particularly elevated, that there seemed to be a trend for anxiety to increase just prior to the attempt, and that in 4 out of 5 patients, the score on the HAM-D suicide item was low. Interestingly, the only patient assessed on the day of the attempt endorsed severe suicidal ideation *and* had a high score on the BRMS. The lack of endorsed suicidal ideation among the remaining suicide attempters suggests that, in some patients, acute suicide risk is transient and may be related to an impulse that lasts only a few hours or days. This finding is consistent with the observations of Oquendo and colleagues,[19] who found that suicide attempters reported more suicidal ideation immediately prior to admission. Indeed, clinical researchers have had little success in predicting or preventing suicide, as evidenced by the stable overall rates of suicide-related morbidity and mortality in the general population.[7] Additional studies of patients with bipolar I disorder are sorely needed since the results may suggest a new avenue of inquiry that will increase our ability to assess both short-term and long-term suicidal risk in this highly vulnerable population.

The conclusions that can be drawn from the present report are limited for a number of reasons. First, the study was retrospective and based on patients' reports of previous suicide attempts, the reliability of which may be questioned in some cases. Second, it should be noted that all of our statements on suicide attempts may not apply to suicide completion. In fact, whether those who die by suicide and those who make serious suicide attempts represent the same population of individuals differing only in the lethality of the suicide attempt or whether they form 2 populations distinguished by differing etiologic factors is still unclear.[30] Finally, although most patients' reports of suicide attempts were verified with records from previous providers and previous hospitalizations, we cannot exclude the possibility that some patients attempted suicide and never reported or received treatment for the attempt. Nonetheless, the study includes a relatively large sample of patients with bipolar I disorder who were diagnosed, treated, and carefully monitored during their acute episodes and for a period of up to 2 years following remission by clinicians trained according to rigorous standards of research practice.

Suicide risk continues to be the primary cause of hospitalizations among patients with depressive mood disorders. Yet, suicide risk remains an enigma. It is imperative that additional studies are performed to elucidate differences and similarities between the correlates of suicidal ideation, suicide attempts, and completed suicide. Very large, relatively long, prospective open and controlled trials focusing on patients with bipolar disorder, such as the ongoing Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD) study, may provide more information on the best strategies to prevent, predict, and treat suicidal ideation and suicidal behavior.

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